Wheat Farm Characteristics, Income, and Costs in 1994

by
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Abstract: Data for 1994, from the most recent Farm Costs and Returns Survey (FCRS) for farms producing wheat show that wheat farms averaged 1,062 acres with 214 acres of wheat. Yields were 16 percent below producers' expectations. Sixty-two percent of farms were found to be in a favorable financial position (positive net farm income and low debt). Costs of producing wheat per acre and per bushel varied considerably among wheat growing regions, due primarily to differences in yields, input use, irrigation, and cropping practices. In 1994, the Central and Southern Plains, a major wheat region, produced wheat at an average economic cost of $4.83 per bushel ($137 per acre). On a bushel basis, the Southeast produced wheat at the lowest costs, $3.24 per bushel.

Keywords: Wheat, costs of production, income, Farm Costs and Returns Survey.

In early 1995, USDA surveyed wheat growers in 21 States about the 1994 production year. Farms in these States accounted for about 82 percent of the U.S. wheat crop in 1994. This article contains some of the preliminary findings from the survey. A later report will more fully explain input use, farm characteristics, costs, and other production factors by size, region, and cost level.

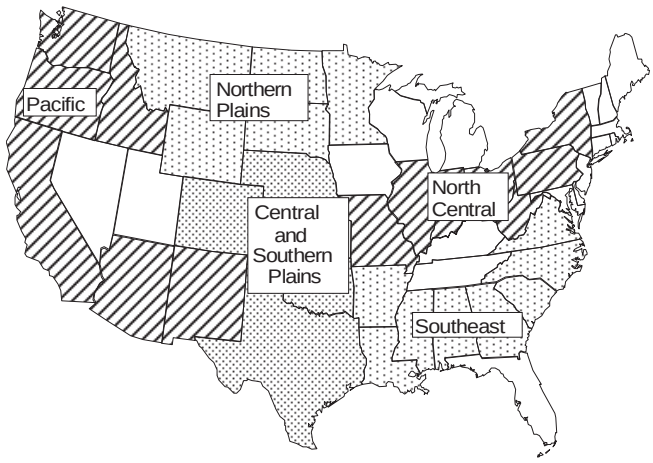
1994 Production Costs

Based on USDA's survey, cash costs of producing the 1994 wheat crop averaged $2.47 per bushel ($82 per planted acre), and total economic costs averaged $4.63 per bushel ($155 per acre). [2] Fertilizer, seed, and chemicals accounted for half of the variable costs. At the average harvest-month price of $3.16 per bushel, 78 percent of wheat growers were able to cover cash costs. When capital replacement costs were included, 62 percent of growers were able to cover costs, and when a charge for unpaid labor was also included, 51 percent of growers were able to cover costs.

At the regional level, survey results showed that cash costs in 1994 varied due to differences in cropping practices, input use, and irrigation. Total cash costs ranged from a low of $70 per acre in the Northern Plains to $147 in the Pacific region. The Pacific region had the highest costs due primarily to irrigation-related expenses. According to the survey, about one fourth of Pacific wheat acreage was irrigated, compared with almost no irrigation in other regions.

The survey showed that in 1994, on average, the value of wheat at harvest-time covered the cash costs in every region, while the value covered cash costs plus capital replacement

Figure E-1
Cost-of-Production Regions for Wheat



in all regions except the Central and Southern Plains. Total economic costs were covered only in the North Central region, where wheat growers also had positive returns to management and risk. Relatively higher grain yields in the North Central region and a large portion of wheat acres harvested for straw, which had a high value as a secondary product, contributed to the positive returns.

On a per bushel basis, cash costs varied greatly among regions due to yields, ranging from $1.94 to $2.67. Economic costs ranged from $3.24 to $5.14 per bushel. Although the Plains had the lowest costs per acre, they had the highest per-bushel costs in 1994 due primarily to poor yields. In 1994, this region's growers harvested about 20 percent less wheat than what they expected.

Other Relevant Regional Factors

The most important region in terms of wheat production was the Central and Southern Plains, followed by the Northern Plains. Together these two regions typically account for two-thirds of U.S. production. The region with the least wheat was the Southeast, accounting for less than 5 percent of the

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[2] ERS prepares production costs estimates on a per-planted acre basis. Costs are included only for acreage that was planted with the intention of being harvested for grain. Wheat planted only as a cover crop or for grazing is excluded. However, costs are included for production that is abandoned because of crop damage. Per-planted acre basis is preferred also for making comparisons across crops because yield differ across commodities and not all commodities are measured in the same units of output.

total wheat crop. The predominant type of wheat grown varied among the regions—hard red winter wheat in the Central and Southern Plains, soft red winter in the North Central region and Southeast, and white wheat in the Pacific region, with a mixture of hard red winter and spring wheats in the Northern Plains.

Summer fallow and double cropping were two other important practices that varied among regions. Pacific growers planted more than half their wheat on previously fallowed land, compared with one-third in the Plains regions and none in eastern regions. On the other hand, double cropping was only reported in eastern regions. In the Southeast, three-fourths of the wheat was double cropped, most likely with soybeans. Wheat pasture in the Central and Southern Plains and wheat straw in the North Central region were important secondary products.

Distribution of Costs

Estimated 1994 variable costs were converted to a per bushel basis and ranked from lowest to highest to form a weighted cumulative distribution of farms and production. These costs were then compared with the distribution estimated from 1989 costs. Drawing conclusions about efficiency is not appropriate because of the differences in yields.

In 1994, twenty-five percent of farms had per bushel variable costs of $1.12 or less (low-cost), and accounted for 19 percent of total production. A majority of these low-cost growers were in the North Central region. At the other end of the distribution, 25 percent of farms had variable costs of $2.22 or more per bushel (high-cost) and accounted for 21 percent of wheat production. In 1994, three-fourths of these growers were in the Plains regions.

Variable costs varied greatly among cost groups, ranging from $0.93 to $3.21 per bushel, due primarily to differences in expected vs. actual yields. In 1994, high-cost growers expected 37 bushels, but harvested 22 bushels of wheat per acre. Low-cost growers harvested 44 bushels per acre, 3 bushels more than what they expected.

When compared with prior cost distributions, low-cost growers in 1989 had variable cash costs of $1.37 or less and accounted for a higher share of wheat production (31 percent in 1989 vs. 19 percent in 1994). On average, the low-cost group planted wheat on 219 acres as part of 1,348 operated acres. This indicates that the low-cost group had a relatively larger-sized operation in 1989 than their counterparts in 1994, due primarily to a large number of these growers being located in the Plains regions (53 percent in 1989 vs. 36 percent in 1994).

High-cost growers in 1989 had variable costs of $3.49 or more and accounted for slightly less of the wheat crop when compared with 1994. These growers expected 29 bushels of wheat per acre, but harvested only 7 bushels. Note that wheat yields in 1989 were the lowest since 1978 (a total of 2.04 billion bushels were produced on 76.6 million planted acres). Three-fourths of high-cost growers were in the Central and Southern Plains region.

Other distinctions include: wheat growers in 1994 had higher yields, were in a relatively better financial position and carried less debt. Low-cost growers owned more and rented less land on a share basis, and, although the value of all commodities produced on the low-cost farms included in the survey increased, wheat's contribution to the total value declined from 21 percent in 1989 to only 9 percent in 1994.

Differences in operator characteristics, input use, and cropping practices such as use of irrigation, summer fallow, double cropping, and grazing did not change significantly between the two surveys.

Table E-1--Production costs and input use of average wheat farms, by region, 1994

Item	Unit	Region					All FCRS farms
		North Central	South-east	Northern Plains	Central and Southern Plains	Pacific	
Share of FCRS:							
Wheat acres	Percent	8	3	40	41	8	100
Wheat production	Percent	13	4	33	35	15	100
Wheat planted	Acres	49	114	370	281	293	214
Wheat yield, actual	Bu./planted acre	53.44	47.03	27.85	28.46	59.96	33.4
Wheat yield, expected	Bu./planted acre	53.45	46.79	34.65	36.39	63.58	39.62
Costs:							
Variable cash costs	Dollars/acre	72.16	81.41	50.31	54.97	110.9	59.98
Fixed cash costs	Dollars/acre	31.25	19.83	19.62	20.98	36.34	22.49
Total, cash costs	Dollars/acre	103.41	101.24	69.93	75.95	147.24	82.47
Economic costs	Dollars/acre	177.69	152.25	143.19	137.42	271.07	154.52
Returns:							
Gross returns	Dollars/acre	182.76	140.89	92.78	91.65	202.23	110.09
Returns above cash costs	Dollars/acre	79.35	39.65	22.85	15.7	54.99	27.62
Returns above economic costs	Dollars/acre	5.07	-11.36	-50.41	-45.77	-68.84	-44.43
Seed:							
Rate, total	Bushels/acre	2.05	2.07	1.6	1.16	1.41	1.45
Home-grown	Percent of seed	29	19	54	49	23	45
Fertilizer use:							
Nitrogen	Percent of farms	100	92	89	83	94	91
Phosphorous	Percent of farms	87	51	79	44	44	67
Potassium	Percent of farms	81	58	28	6	13	40
Nitrogen	Pounds per acre	85	74	50	52	73	57
Phosphorus	Pounds per acre	59	27	22	15	13	22
Potassium	Pounds per acre	66	44	3	1	2	8
Chemical use:							
Any chemicals	Percent of farms	19	46	85	38	94	46
Herbicides	Percent of farms	19	39	85	35	94	45
Insecticides	Percent of farms	1/	10	1/	8	9	4
Herbicides	Acre-treatment	0.18	0.55	1.23	0.36	1.27	0.77
Tillage system use:							
Conventional tillage	Percent of farms	64	74	64	87	85	73
Conservation tillage	Percent of farms	37	26	36	13	15	27
Tillage and planting	Field passes	2.73	3.07	3.62	4.81	4.45	3.71
Tillage and planting	Hours per acre	1.11	0.54	0.49	0.65	0.66	0.77
Soil surface covered	Percent	27	19	24	18	13	22
Custom operations:							
Any custom operations	Percent of farms	50	75	57	70	83	61
Cultivation and planting	Percent of farms	5	14	23	20	41	17
Fert/chemical application	Percent of farms	44	67	44	50	70	49
Harvesting/hauling	Percent of farms	13	27	19	36	34	23
Fuel:							
Diesel	Gallons per acre	2.99	4.17	4.13	5.41	7.82	4.87
Gasoline	Gallons per acre	2.73	2.43	2.42	2.58	2.8	2.55
Labor (unpaid)	Hours per acre	1.36	1.12	0.95	1.52	2.03	1.39

1/ Insufficient data for disclosure.

Table E-2--Characteristics of average wheat farms, by region, 1994

Item	Unit	Region					All FCRS farms
		North Central	South-east	Northern Plains	Central and Southern Plains	Pacific	
Share of FCRS:							
Wheat farms	Percent	34	6	23	31	6	100
Wheat production	Percent	13	4	33	35	15	100
Size:							
Operated acreage	Acres	542	653	1,608	1,260	1,284	1,062
Planted wheat acreage	Acres	49	114	370	281	293	214
Sales class:							
$49,999 or less	Percent of farms	36	17	35	40	26	35
$50,000-$99,999	Percent of farms	17	11	24	20	16	19
$100,000-$499,000	Percent of farms	42	58	39	38	44	41
$500,000 or more	Percent of farms	1/	14	1/	1/	14	5
Wheat production value	Dollars per farm	7,616	16,883	35,835	25,724	63,336	23,675
Farm production value	Dollars per farm	197,795	366,054	117,402	111,675	398,810	174,910
Enterprise size:							
Fewer than 50	Percent of farms	70	51	23	26	33	42
50-199	Percent of farms	26	33	33	34	33	31
200-399	Percent of farms	1/	11	10	16	8	10
400 or more	Percent of farms	1/	6	33	24	25	17
Wheat tenure acreage:							
Owned	Percent of acreage	50	31	44	35	33	39
Cash-rented	Percent of acreage	25	46	37	16	10	25
Share-rented	Percent of acreage	26	23	18	50	57	35
Wheat type:							
Winter wheat	Percent of acreage	100	100	12	99	86	64
Spring wheat	Percent of acreage	0	0	88	1/	14	36
Wheat production practices:							
Irrigated	Percent of acreage	1/	1/	1/	5	25	1/
Fallow	Percent of acreage	1/	5	33	31	53	31
Double-cropped	Percent of acreage	21	73	0	1/	1/	6
Percent straw	Percent of acreage	36	7	1/	1/	9	6
Percent grazed	Percent of acreage	1/	1/	1/	20	1/	9
Previous crop:							
Wheat	Percent of farms	1/	1/	12	44	10	17
Corn	Percent of farms	14	29	15	3	2	11
Soybeans	Percent of farms	68	30	19	8	0	31
Fallow	Percent of farms	1/	5	28	30	27	19
Production specialty:							
Cash grains	Percent of farms	67	37	57	67	39	61
Other crops	Percent of farms	1/	46	1/	9	45	9
Livestock	Percent of farms	33	17	43	24	16	30
Livestock:							
Beef cattle	Percent of farms	48	35	52	50	39	48
Hogs	Percent of farms	30	19	13	1/	1/	16
Dairy	Percent of farms	20	6	10	1/	1/	10
Wheat for farm use	Percent of production	7	3	4	4	2	4
Government program:							
Payments	Dollars per farm	4,720	12,230	12,101	10,787	13,448	9,278
Participation in program crops	Percent of farms	63	66	93	93	78	80
Participation in wheat	Percent of farms	57	45	81	84	69	71
Wheat base	Acres	41	103	381	290	323	217
Set-aside, CU and CRP	Acres	31	28	72	167	181	91
Operator characteristics:							
Farming as major occupation	Percent of farms	84	86	92	79	92	85

1/ Insufficient data for disclosure.

Table E-3--Income and balance sheet statements for average wheat farm, by region, 1994

Item	Region					All FCRS farms
	North Central	South-east	Northern Plains	Central and Southern Plains	Pacific	
Number of wheat farms	90,037	15,763	60,915	82,300	16,230	265,245
Acres operated	542	653	1,608	1,260	1,284	1,062
	Dollars per operation					
Gross cash income	178,400	255,189	121,145	119,153	357,587	162,396
. Livestock sales	97,332	20,852	36,427	34,441	26,770	54,968
. Wheat sales	6,088	13,889	27,703	19,791	33,270	17,431
. Crop sales	67,051	174,887	34,742	39,284	213,961	66,413
. Government payments	4,720	12,230	12,101	10,787	13,448	9,278
. Other farm-related income	3,209	33,331	10,173	14,851	70,138	14,306
Less: Cash expenses	151,091	155,724	97,954	92,253	260,921	127,627
.Variable	125,996	120,692	65,487	70,565	217,899	100,209
. Livestock purchases	18,643	2,279	6,995	12,907	828	12,125
. Feed	34,765	7,907	5,436	4,711	9,037	15,534
. Other livestock expenses	2,606	1,034	1,520	2,711	1,302	2,216
. Seed and plants	7,374	10,047	5,725	3,947	16,512	6,650
. Fertilizer and chemicals	22,359	41,352	17,297	13,581	50,668	21,334
. Hired labor	9,538	20,120	4,775	5,480	63,161	11,095
. Fuels and oils	5,522	10,120	6,484	7,162	14,733	7,089
. Repairs and maintenance	9,468	11,577	8,670	8,899	23,478	10,091
. Machine-hire & custom	2,617	4,656	3,202	4,146	11,330	3,880
. Utilities	2,841	6,334	2,271	3,385	17,115	3,960
. Other variable expenses	10,263	5,266	3,113	3,636	9,734	6,235
.Fixed	25,095	35,033	32,467	21,689	43,022	27,419
. Real estate & prop. taxes	3,696	2,403	3,461	2,636	4,377	3,278
. Interest	6,231	9,480	9,455	8,954	14,895	8,540
. Insurance	3,131	6,350	5,093	4,144	7,681	4,365
. Rent and lease payments	12,037	16,800	14,458	5,955	16,069	11,236
Equals: Net cash farm income	27,309	99,465	23,191	26,899	96,666	34,768
Less:						
. Depreciation	16,598	18,193	16,000	11,647	20,238	15,242
. Non-cash labor benefits	424	619	263	465	1,911	502
Plus:						
. Value of inventory change	3,859	4,257	398	581	27,124	3,494
. Nonmoney income	4,729	4,668	3,586	2,998	6,494	4,034
Equals: Net farm income	18,875	89,578	10,912	18,366	108,135	26,552
Off-farm income	21,390	27,578	21,947	23,392	29,137	23,023
Total assets	712,612	576,763	603,243	454,076	977,643	615,420
Less: Total debt	82,242	80,187	120,295	96,088	143,860	98,926
Equals: Net worth	630,370	496,577	482,947	357,988	833,783	516,495
Financial position (percent of farms):						
. Favorable	69	65	47	61	75	62
. Marginal income	23	15	36	19	21	24
. Marginal solvency	1/	7	10	16	1/	9
. Vulnerable	1/	13	7	5	1/	5

1/ Insufficient data for disclosure.

Table E-4--Wheat production costs per planted acre, 1994-95

Item	United States		Region: North Central		Southeast		Northern Plains		Central and Southern Plains		Pacific	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
	Dollars per planted acre											
Cash expenses:												
Seed	7.46	7.57	13.42	14.09	12.78	13.20	7.83	7.44	5.09	5.30	9.63	10.06
Fertilizer, lime, and gypsum	16.70	20.89	37.50	43.66	32.90	36.91	12.25	15.34	13.70	17.37	26.95	32.88
Chemicals	5.69	5.86	0.86	0.90	6.76	6.93	7.61	7.98	2.81	2.90	14.68	15.10
Custom operations 1/	5.70	5.96	4.49	4.75	6.67	6.91	2.54	2.59	8.62	9.08	7.18	7.06
Fuel, lube, and electricity	8.55	8.47	5.15	5.28	5.52	5.20	5.82	5.99	9.80	9.44	19.79	19.45
Repairs	11.69	12.20	8.17	9.13	9.53	9.54	12.07	12.51	10.86	11.53	18.07	18.12
Hired labor	3.83	4.01	1.84	1.93	6.95	7.21	2.16	2.30	4.03	4.15	11.49	11.76
Other variable cash expenses 2/	0.36	0.38	0.73	0.74	0.30	0.31	0.03	0.03	0.06	0.06	3.11	3.07
Total, variable cash expenses	59.98	65.34	72.16	80.48	81.41	86.21	50.31	54.18	54.97	59.83	110.90	117.50
General farm overhead	5.36	7.00	8.13	10.34	3.91	5.13	4.18	5.45	5.22	6.74	9.67	12.45
Taxes and insurance	9.29	10.08	15.55	15.29	11.39	12.04	7.83	8.83	8.01	8.46	15.81	17.23
Interest	7.84	10.94	7.57	10.47	4.53	5.97	7.61	10.68	7.75	10.85	10.86	14.93
Total, fixed expenses	22.49	28.02	31.25	36.10	19.83	23.14	19.62	24.96	20.98	26.05	36.34	44.61
Total, cash expenses	82.47	93.36	103.41	116.58	101.24	109.35	69.93	79.14	75.95	85.88	147.24	162.11
Economic (full ownership) costs:												
Variable cash expenses	59.98	65.34	72.16	80.48	81.41	86.21	50.31	54.18	54.97	59.83	110.90	117.50
General farm overhead	5.36	7.00	8.13	10.34	3.91	5.13	4.18	5.45	5.22	6.74	9.67	12.45
Taxes and insurance	9.29	10.08	15.55	15.29	11.39	12.04	7.83	8.83	8.01	8.46	15.81	17.23
Capital replacement	21.87	22.81	18.19	20.27	18.60	18.64	23.41	24.24	18.63	19.77	35.02	35.08
Operating capital	1.40	1.83	1.68	2.25	1.90	2.41	1.17	1.51	1.28	1.67	2.59	3.28
Other nonland capital	11.52	11.95	10.39	11.40	10.37	10.25	13.14	13.51	9.62	10.18	14.59	14.58
Land	36.90	42.51	42.99	50.62	18.06	20.00	37.36	43.02	30.14	32.29	69.12	89.16
Unpaid labor	8.20	8.51	8.60	8.81	6.61	6.41	5.79	5.92	9.55	9.90	13.37	13.91
Total, economic costs	154.52	170.03	177.69	199.46	152.25	161.09	143.19	156.66	137.42	148.84	271.07	303.19

1/ Cost of custom operations and technical services. 2/ Cost of purchased irrigation water and baling.